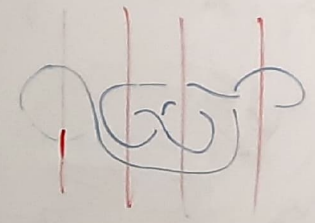


F		digamma
Ð ð		eth
Þ þ		thorn
ƿ		wynn
ȝ	ȝ	yogh
Æ æ		ash
Ȱ	&	ampersand
ƒ	æ	ethel
ſ	ʀ	ord
	ʃ	long S

GT Lie bialg on $|kT|$
 $[,] : |kT| \otimes |kT| \rightarrow |kT|$
 $\delta^+ : |kT| \rightarrow |kT| \otimes |kT|$

$K = \frac{\text{knots in PD studio}}{\text{HOMFLY relns } (+?)}$

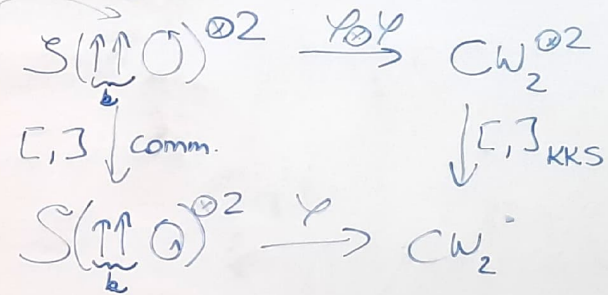
$[,] = \text{commutator}$
 $\delta^+ = \text{double + separate}$



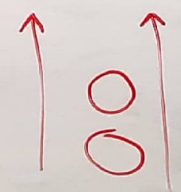
$\mathcal{K} \rightarrow S \xrightarrow{\cong} CW$

Assoc graded GT Lie bialg
 $- [,]_{KKS} : CW \otimes CW \rightarrow CW$
 $\delta_{alg}^+ : CW \rightarrow CW \otimes CW$

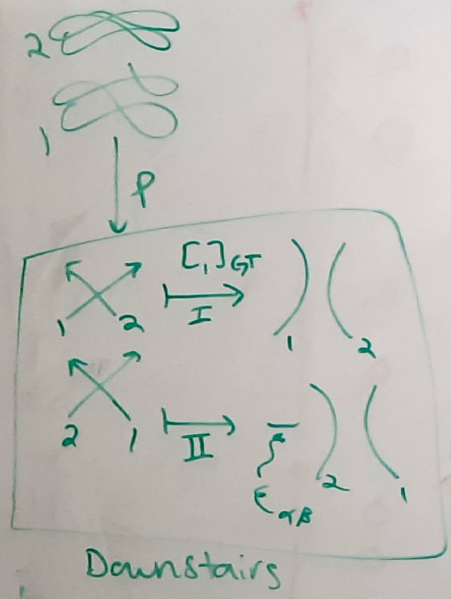
no chords
between
||||



similar interp. for δ_{alg}^+
 $\rightarrow \Delta$ and separate?



F	digamma	2
θ	eth	1
ϑ	thorn	1
ƿ	wynn	2
ȝ	yogh	3
æ	ash	2
&	ampersand	2
æ	ethel	2
ꝛ	ord	2
ſ	long S	1



$$l(\begin{matrix} \nearrow \\ \searrow \end{matrix}) + l^{-1}(\begin{matrix} \nwarrow \\ \swarrow \end{matrix}) + m(\begin{matrix} \uparrow \\ \downarrow \end{matrix}) = 0$$

I. upstairs

$$\begin{matrix} \nearrow \\ \searrow \end{matrix} = -l^2 \begin{matrix} \nwarrow \\ \swarrow \end{matrix} - lm \begin{matrix} \uparrow \\ \downarrow \end{matrix}$$

II

$$\begin{matrix} \nwarrow \\ \swarrow \end{matrix} = -l^{-2} \begin{matrix} \nearrow \\ \searrow \end{matrix} - ml \begin{matrix} \uparrow \\ \downarrow \end{matrix}$$

project

$$\begin{matrix} \nwarrow \\ \swarrow \end{matrix} = -l^2 \begin{matrix} \nwarrow \\ \swarrow \end{matrix} - lm \begin{matrix} \uparrow \\ \downarrow \end{matrix}$$

$$\begin{matrix} \nwarrow \\ \swarrow \end{matrix} = -l^{-2} \begin{matrix} \nwarrow \\ \swarrow \end{matrix} - ml \begin{matrix} \uparrow \\ \downarrow \end{matrix}$$

$$0 \rightarrow \frac{k-z^{-1}}{z} \begin{matrix} \nwarrow \\ \swarrow \end{matrix} = \dots = a \begin{matrix} \nwarrow \\ \swarrow \end{matrix}$$

$$l(\begin{matrix} \nwarrow \\ \swarrow \end{matrix}) + l^{-1}(\begin{matrix} \nwarrow \\ \swarrow \end{matrix}) + m(\begin{matrix} \uparrow \\ \downarrow \end{matrix}) = 0$$

$$\downarrow \text{cp} \quad l \begin{matrix} \uparrow \\ \downarrow \end{matrix} + l^{-1} \begin{matrix} \uparrow \\ \downarrow \end{matrix} + m \begin{matrix} \uparrow \\ \downarrow \end{matrix} = \begin{matrix} \uparrow \\ \downarrow \end{matrix} (l + l^{-1} + m) = 0$$

$$l(\begin{matrix} \nwarrow \\ \swarrow \end{matrix}) + l^{-1}(\begin{matrix} \nwarrow \\ \swarrow \end{matrix}) + m(\begin{matrix} \uparrow \\ \downarrow \end{matrix}) = 0$$

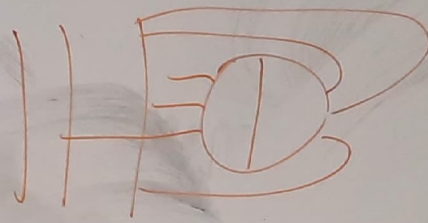
$$-l \begin{matrix} \uparrow \\ \downarrow \end{matrix} - l^{-1} \begin{matrix} \uparrow \\ \downarrow \end{matrix} + m \begin{matrix} \uparrow \\ \downarrow \end{matrix} = \begin{matrix} \uparrow \\ \downarrow \end{matrix} (-l - l^{-1} + m) = 0$$

$$\begin{matrix} \uparrow \\ \downarrow \end{matrix} (1 + l^2 + lm) = 0$$

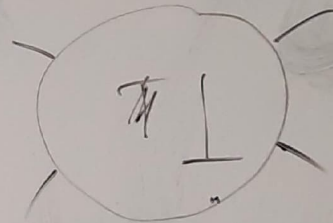
$$\begin{matrix} \uparrow \\ \downarrow \end{matrix} (-1 - l^{-2} + ml^{-1}) = 0$$

$$-l^2 - 1 + ml = 0$$

$$Z : \mathcal{T}(PDS_p) \rightarrow \mathcal{A}(PDS_p)$$



Legal 4T's



$$Z_{m,n} \xrightarrow{\mathcal{T}} \mathcal{A}_{SM,SM}$$

$$Z_{\infty,0} \xrightarrow{\mathcal{T}} \mathcal{A}_{\infty,0}$$

$$Z_{\infty,1}(\bar{x}), Z_{\infty,1}(\bar{y}) \in \mathcal{A}_{\infty,1}$$

$$\begin{matrix} A > B \\ \vee & \vee \\ C > D \end{matrix} \rightarrow \begin{matrix} A/B \\ \uparrow \\ C/D \end{matrix}$$

$$\frac{A/B}{C/D} = \frac{A}{B+C}$$

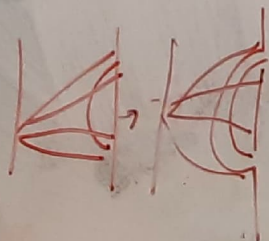
Knot mutations $\xleftrightarrow{\text{Josh}}$ "Whitney flip"

\downarrow Whitney

2-isomorphism

Siouxsie

$$\mathcal{T}(PDS_p) \rightarrow F_{min}$$



of switches



$K_p = \langle \text{Links in a PDSP} \rangle$
 $\xrightarrow{\exists \text{ expansion } Z}$
 Z
 $\xrightarrow{\text{const. Kontsevich / Assoc. homomorphic w.r.t. (1. stacking, 2. Flipping) (maybe also detouring comps)}} \mathcal{K} = \mathcal{A} = \bigoplus \mathcal{A}_{m,n} = \langle \text{link diagrams} \rangle / \text{local 4T}$

Doubly-Filtered by
 strand cross strand : m
 & strand cross pole : n
 Filtration

$\text{deg } a = \begin{pmatrix} 5\text{-deg} & 1\text{-deg} \\ 1 & 0 \end{pmatrix}$

Claim

$Z: \mathcal{K}_p \rightarrow \mathcal{A}_p$
 \downarrow
 $\bar{Z}: \bar{\mathcal{K}}_p \rightarrow \bar{\mathcal{A}}_p$

$\bar{\mathcal{A}}_p = \mathcal{A}_p[a]$ / strand HOMFLYPT rel.
 $\bar{\mathcal{K}}_p = \mathcal{K}_p[a]$ / ...

$\dots = a \text{ (link diagram)}$
 $\text{crossing} = (e^{a_2} - e^{-a_2})^{\uparrow}$

$Z(\text{crossing}) = Z(\text{link}) - Z(\text{link})$
 $= e^{a_2} - e^{-a_2}$
 $= (e^{a_2} - e^{-a_2})^{\uparrow}$
 $= e^{a_2} - e^{-a_2} Z(\text{link}) \rightarrow a \text{ (link)}$

$\bar{Z}: \mathcal{K}/\mathcal{K}_{1,*} \rightarrow \mathcal{A}/\mathcal{A}_{1,*} = \mathcal{A}_{0,*} = \text{link diagrams} / \text{local 4T} \sim \text{link diagrams} = \text{ACW}$
 GCW

$\bar{Z}|_{\mathcal{K}/\mathcal{K}_{2,*}} \in \mathcal{A}/\mathcal{A}_{2,*} = \langle \text{link diagrams} \rangle + \langle \text{5-deg stuff} \rangle \cdot a$
 ACW

$\langle \text{link diagrams} + a \langle \text{GCW} \rangle \rangle$